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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,443	11/15/2005	Hidenori Arai	P70539US0	6194
136 7590 10/02/2007 JACOBSON HOLMAN PLLC 400 SEVENTH STREET N.W. SUITE 600 WASHINGTON, DC 20004			EXAMINER LEE, GILBERT Y	
			ART UNIT 3673	PAPER NUMBER
			MAIL DATE 10/02/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/531,443	Applicant(s) ARAI ET AL.	
	Examiner Gilbert Y. Lee	Art Unit 3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/18/07 has been entered.

### ***Claim Objections***

2. Claim 5 is objected to because of the following informalities: in line 2, "is" should be changed to --are--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites "a vertical angle". It is unclear to the examiner as to what the vertical angle is referencing.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hocking (GB Patent No. 1,219,272) in view of Johnston (US Patent No. 6,729,624).

Regarding claim 1, the Hocking reference discloses a seal (1) provided in an annular space formed between a shaft and a housing (Page 1, Lines 17-24), which move relatively to each other in a direction of the shaft (Page 1, Lines 17-24), said seal comprising

a seal lip (7) brought into sliding contact with a surface of the shaft (Fig. 1),  
the seal lip having a two-step lip structure (Fig. 1) including a first step (e.g. A) and a second step (e.g. B),

a plurality of protrusions (e.g. protrusions between 15 and 16) extending in a direction parallel to the shaft (Fig. 1), said plurality of protrusions being formed on a surface of the second step (Fig. 1).

However, the Hocking reference fails to explicitly disclose the sealing being a reciprocating seal.

The Johnston reference, a radial shaft seal, discloses the lip seal being used for either a reciprocating seal or a rotating seal.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the seal of the Hocking reference to a reciprocating shaft in view of the teachings of the Johnston reference in order to provide a seal having hydrodynamic sealing effect.

Regarding claim 4, the Hocking reference, as modified in claim 1, discloses the plurality of protrusions are equally spaced (Page 2, Lines 75-83).

Regarding claim 5, the Hocking reference, as modified in claim 1, discloses the shape of said plurality of protrusions being triangular (Fig. 1).

Regarding claim 6, the modified Hocking reference, as best understood, discloses the invention substantially as claimed in claim 5.

However, the modified Hocking reference fails to explicitly disclose a vertical angle of each of the plurality of protrusions being  $60^{\circ}$  to  $120^{\circ}$ .

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the vertical angle of each of the plurality of protrusions be  $60^{\circ}$  to  $120^{\circ}$  as a matter of mechanical expedience.

Regarding claims 7 and 8, the modified Hocking reference discloses the invention substantially as claimed in claim 1.

However, the modified Hocking reference fails to explicitly disclose a height of the plurality of protrusions being 2 to  $500\mu\text{m}$ , specifically  $5\text{-}100\mu\text{m}$ .

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the height of the plurality of protrusions being 2 to 500 $\mu$ m, specifically 5-100 $\mu$ m as a matter of mechanical expedience.

Regarding claim 9, the modified Hocking reference discloses the invention substantially as claimed in claim 1.

However, the modified Hocking reference fails to explicitly disclose an interval between peaks of the protrusions being 0.005 to 1.0 mm.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make an interval between peaks of the protrusions being 0.005 to 1.0 mm as a matter of mechanical expedience.

5. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hocking in view of Johnston as applied to claims 1 and 4-9 above, and further in view of Sponagel et al. (US Patent No. 5,143,385).

Regarding claim 2, the Hocking reference, as modified in claim 1, discloses the plurality of protrusions extending from a peak of said second step (Fig. 1).

However, the modified Hocking reference fails to explicitly disclose a sub seal lip.

The Sponagel et al. reference, a lip seal, discloses the addition of a sub seal lip (e.g. 2 in Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a sub seal lip to the Hocking reference in view of the teachings of the Sponagel et al. reference in order to provide an extra sealing lip to block debris.

Regarding claim 3, the Hocking reference, as modified in claim 2, discloses the plurality of protrusions originating at one end from the peak of said second step (Fig. 1).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gilbert Y. Lee whose telephone number is 571-272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Art Unit: 3673

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GL  
September 26, 2007

  
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